



US 20040022840A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2004/0022840 A1**
Nagy et al. (43) **Pub. Date: Feb. 5, 2004**(54) **NANOPARTICLE VACCINES****Publication Classification**(76) Inventors: **Jon O. Nagy**, Bozeman, MT (US);
Robert F. Bargatze, Bozeman, MT
(US); **John W. Jutila**, Bozeman, MT
(US); **Jim E. Cutler**, New Orleans, LA
(US); **Pati M. Glee**, Bozeman, MT
(US)(51) **Int. Cl.⁷** **A61K 39/00**; A61K 9/127(52) **U.S. Cl.** **424/450**; 424/185.1

Correspondence Address:

Michael L. Goldman
NIXON PEABODY LLP
Clinton Square
P.O. Box 31051
Rochester, NY 14603-1051 (US)(57) **ABSTRACT**(21) Appl. No.: **10/413,607**(22) Filed: **Apr. 14, 2003****Related U.S. Application Data**(60) Provisional application No. 60/372,631, filed on Apr.
12, 2002.

The present invention relates to nanoparticle vaccines comprised of a carrier, particularly polymerized lipids, having multiple copies of an antigen or combinations of different antigens displayed on the carrier. Such antigen-displaying nanoparticles may also display a targeting molecule on its surface in order to direct it to a specific site or cell type to optimize a desired immune response. The present invention also relates to encapsulating an antigen or combinations of different antigens within such nanoparticles, with or without a targeting molecule displayed on its surface. The antigens used in this invention are effective to produce an immune response against a variety of pathological conditions.